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Statement of

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

before the

Subcommittee on HUD, Space, and Science
Committee on Appropriations
United States Senate

Mr. Chairman and Members of the Subcommittee:

It is an honor to be here today to discuss the FY 1972 Budget of the National Aeronautics and Space Administration.

Accompanying me today are Dr. George M. Low, Deputy Administrator, Mr. Willis H. Shapley, Associate Deputy Administrator, Mr. Richard McCurdy, Associate Administrator for Organization and Management, and Mr. William E. Lilly, Assistant Administrator for Administration, who is our chief financial officer. All these gentlemen are well known to the Subcommittee, I believe, except for Mr. McCurdy, who has joined NASA during the past year after a distinguished career as President of the Shell Oil Company. Since for me and Mr. McCurdy this is our first appearance before the Subcommittee, we have short biographical sketches for inclusion in the record if the Subcommittee wishes.

My statement will be very brief, and in two parts. First, I will summarize NASA's FY 1972 Budget request and the principal items included in it. Then I will outline briefly what I regard as the principal reasons why the country and the Congress should support the long-term program in aeronautics and space in which our FY 1972 Budget is the next step. A longer statement discussing our FY 1972 Budget in more detail has been provided to the Subcommittee for inclusion in the record if you wish.

The appropriations recommended by the President for NASA for FY 1972 total $3,300.6 million, consisting of $3,271.3 million in the Budget submitted in January and $29.3 million for civil service pay increases in a Budget amendment submitted on April 19, 1971. The total amount recommended is approximately the same as the total appropriated for FY 1971--$3,312.6 million, as shown in Table 1 attached to my statement.

The status of our FY 1972 authorizations is shown in Table 2 attached to my statement. As indicated, the House has passed authorizations totaling $3,433.1 million, $161.8 million above the President's Budget, and the Senate Committee on Aeronautical and Space Sciences has recommended authorizations totaling $3,280.8 million, $9.5 million above the Budget. These authorizations do not include the $29.3 million required for

civilian pay increases under the Federal Pay Comparability Act of 1970.

The principal programs funded in our FY 1972 Budget are the following:

-- Apollo 15, 16, and 17 will be our final three manned flights to the moon. These missions, with improved equipment and longer stay-times on the moon, are required to give us the scientific harvest of our investment in the Apollo lunar program over the past ten years.

-- Skylab, the first and only experimental Space Station in our program, is well along in development and will fly in 1973. It will be larger but two years later than the Soviet Salyut now in orbit. After Skylab there are no U.S. manned space flights planned until the Space Shuttle is ready, a gap of about four years.

-- The Space Shuttle, a reusable space vehicle to take unmanned and manned spacecraft to and from orbit, is the most important new undertaking in the FY 1972 Budget. When developed, the reusable Space Shuttle will give NASA, the Department of Defense, and other space users a whole new range of capabilities and reduce dramatically the cost of unmanned and manned missions. It will open up a whole new era in space science

and applications. With the Space Shuttle we will be able to do more in space, better, and with less cost. The FY 1972 Budget provides for proceeding with engine development and for initiating airframe development or continuing design studies, depending on the results of studies now underway.

-- For the exploration of the planets, in addition to Mariner 9 now on its way to orbit and map the planet Mars, we are continuing work on the Viking program to land scientific instruments on Mars in 1976 and on spacecraft to fly by and observe Venus, Mercury, and Jupiter. We also propose to begin development of a new spacecraft, called TOPS, for exploring Jupiter and the more distant outer planets -- Saturn, Uranus, Neptune, and Pluto. We need to start this program in FY 1972 to be able to take advantage of the rare opportunity in the late 1970's for "Grand Tour" missions which can explore all of these planets economically -- three or more on a single flight.

-- In space science, in addition to programs now underway we plan an unmanned High Energy Astronomical Observatory (HEAO) to make observations which are impossible to make from earth to help solve some of the most perplexing problems of the universe like those posed by the mysterious giant sources of energy known as quasars and pulsars.

-- In space applications, we will continue work on satellites of several types -- to study the earth's weather, to advance communications techniques, and to study the earth's natural resources and environment from space.

-- In aeronautics, we will continue our research in support of military and civil aviation and propose to begin development of an experimental jet short-take-off-and-landing (STOL) research airplane with quiet engines.

-- For "Construction of Facilities," our FY 1972 estimates include facility modifications required in FY 1972 to support the Space Shuttle, Viking, and aeronautics programs.

-- In "Research and Program Management," our estimates anticipate a further reduction of 1500 civil service positions which will bring the total reduction in NASA civil service personnel in the past four years to almost 7000, a 20% reduction.

Our FY 1972 Budget was necessarily prepared within severe financial constraints. To stay within these constraints and to avoid unreasonable funding requirements in future years, we took a number of actions to reduce our program. For example:

-- We cancelled last fall the final two of the previously planned Apollo flights to the moon, Apollos 18 and 19.

-- We deferred the Space Station and will not develop it at the same time as the Space Shuttle as previously planned. The Space Station would require the Space Shuttle, but the Space Shuttle does not require the Space Station. The Shuttle by itself can conduct manned missions in earth orbit in addition to its function of taking unmanned satellites to orbit and back to earth.

-- We deferred, in our long-range planning, the first large space missions requiring nuclear propulsion from the early to the middle 1980's. For this reason we decided to limit work on NERVA in FY 1972 to technology and some long lead time developments in a manner which we believe will permit us to hold together the core of this specialized capability until it is timely to proceed with the full development.

These, then, Mr. Chairman, are the highlights of our FY 1972 Budget estimates.

I would like to use the remainder of my statement to discuss a more basic issue, which perhaps is even more important than the details of the programs we are proposing. This

is the question, "Why should the nation continue to spend so much money on the space program?" I believe that this is the basic concern that people have today about the space program.

There are many different reasons why the nation should have a strong and continuing program in space and aeronautics. There are many different standpoints from which the question can be asked and answered. And there is room for many different views on which reasons are important and which are not.

Let me state several lines of reasoning, each of which seems compelling to me and which, taken together, provide, I believe, an overwhelming case for the necessity and importance of proceeding in FY 1972 and the years ahead with a program such as NASA and the Administration are recommending.

My <u>first</u> reason is simply the fact that we are in the space age. We can't turn back. Sputnik and all the other space advances down through Apollo and Salyut have started something that will go on. We really can't get out of space and hardly anyone, as far as I know, seriously suggests that we should. The real question is what we should do, how much, and when.

The answer which I believe makes the most sense in this time of many competing priorities is this: we should (1) maintain forward motion in the most important -- but not all -- areas of space exploration, science, and applications, at the lowest cost consistent with meaningful progress, and (2) focus future developments on efforts which, like the Space Shuttle, will reduce cost as well as increase capabilities. This is what the program we are presenting seeks to do.

So the first line of reasoning is: the space age is here, we are in space to stay, and we must stay in space with a productive, forward-looking, cost conscious program.

My <u>second</u> line of reasoning supports the proposition that a strong program in space and aeronautics is essential to our long term national well-being. Our capabilities as a nation to deal with domestic problems of high priority -- poverty, cities, the environment, and so on, and, indeed, our pursuit of happiness and cultural advance, ultimately depend on whether we can maintain a strong economy with continually increasing productivity. Increasing productivity, in turn, depends primarily on technological advance, which, in turn, results primarily from the large-scale focussed technological

efforts like our major space programs. Thus, a strong continuing space program, in addition to its other more direct benefits, can provide the spur and focus needed to produce the advanced technology to increase the productivity of our economy and give us the capability to deal with our other national problems.

A third reason in support of the space program is the direct benefits -- near and long-term. The benefits of space exploration and space science are of a long-term nature and cannot now be foreseen. Historically, new discoveries and new basic science have resulted in practical benefits from 30 to 50 or more years later. We know this will happen even though we cannot now predict in detail what the benefits will be. Technological benefits come sooner. The carry-over into many other fields of computer technology developed in the space program is a clear example. The direct benefits in "space applications" and aeronautics are much closer at hand. Many have already been realized in the form of weather satellites, worldwide satellite communications, and in the advanced aircraft that have come into service in recent years. When 50,000 lives were saved as a result of satellite advance

warning at the time of Hurricane Camille, the space program probably paid for itself (certainly in the minds of the people saved!). Finally, there are the "spin-off" benefits in a wide variety of fields -- improved medical sensors, fire-proof materials, and so on -- which are important by-products of the space program.

Fourth on this list but not in priority, is the importance of space for national security. Every major advance in technology -- in ships, land transport, and aircraft -- has had a significant and often decisive impact on relations between nations. We cannot ignore the real likelihood that this will also be true in space. A strong continuing space program is essential to assure that in the years to come the nation will have the advanced technology and capabilities for operations in space it may need.

Finally, I believe that the space program is a value in itself to the nation and to the whole world. With our everyday preoccupation, necessarily, with the many serious and often depressing problems we face -- the war, unemployment, pollution, crime, narcotics, and so on -- there is, I believe, a human hunger for positive elevating goals to work for at

the same time as we do what needs to be done in all these other difficult areas.

I believe the strong attraction that the landing of the first man on the moon had on people everywhere, and much of the underlying base of support in the country for the space program, stem from the fact that the space program provides such goals. The space program gives us goals seemingly beyond human capability, goals which transcent earthly boundaries. In difficult times our achievements in space exploration give us as a nation and as individuals something of which we can truly be proud. I cannot measure these values but they are real and, I believe, essential. We should recognize their importance in our national decisions.

Mr. Chairman, I realize that in this brief statement I have not been able to do more than outline in the briefest form the content of our FY 1972 Budget and the principal basic justifications for the space program as I see them. My colleagues and I will welcome the opportunity to discuss any or all of these matters in whatever detail the Subcommittee may wish.

Thank you, Mr. Chairman.

Table 1

National Aeronautics and Space Administration

FY 1972 BUDGET

(Obligational Authority)

	(Thousands of dollars)		
	FY 1970	FY 1971	FY 1972
Research and Development	3,110,427[a]	2,555,000	2,517,700
Construction of Facilities	50,112	24,950	56,300
Research and Program Management	702,178	688,725	697,350
TOTAL	3,862,717	3,268,675	3,271,350
Civilian pay increases:			
FY 1971 Supplemental (P.L. 92-18, May 25, 1971)		43,944[b]	
FY 1972 Budget Amendment, April 19, 1971			29,285[b]
GRAND TOTAL	3,862,717	3,312,619	3,300,635

[a] Includes $117,473 of 1969 funds applied to 1970 program.

[b] Additional amounts under "Research and Program Management."

Table 2

National Aeronautics and Space Administration

FY 1972 AUTHORIZATION

	(Thousands of Dollars) FY 1972 Budget	Passed by House (HR 7109)	Reported to Senate (Rpt. #92-146)
NASA FY 1972 Authorization Bill			
Research and Development:			
Apollo	612,200	612,200	612,200
Space flight operations	672,775	745,275	672,775
Advanced missions	1,500	10,000	1,500
Physics and astronomy	110,300	112,800	110,300
Lunar and planetary exploration	311,500	311,500	291,500
Space applications	182,500	182,500	185,000
Launch vehicle procurement	146,100	146,100	146,100
Aeronautical research and technology	110,000	134,500	110,000
Space research and technology	75,105	75,105	75,105
Nuclear power and propulsion	27,720	67,620	70,720
Tracking and data acquisition	264,000	264,000	264,000
Technology utilization	4,000	6,000	4,000
Total, Research and Development	2,517,700	2,667,600	2,543,200
Construction of facilities	56,300	58,630	56,300
Research and program management	697,350	706,850	681,350
Total	3,271,350	3,433,080	3,280,850
Federal Pay Comparability Act of 1970			
Research and program management	29,285[a]		
GRAND TOTAL	3,300,635		

[a] Budget Amendment, April 19, 1971

NASA-HQ